University of Toronto
Faculty of Applied Science and Engineering
ECE454
Lab 2 Report

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Explanation:

Our rotate() function splits the image into blocks and processes these blocks. This is done to ensure cache spatial locality. Because the rotate function has less L1 cache misses compared to the naive rotate version, it completes in significantly less clock cycles. Our tile is of size 16x32 for all dimensions. We noticed that this shape of the tile varies cache hits. We focussed on optimizing the inner loops since the code gets repeatedly executed in loops. We used loop invariant code motion to get rid of repeated calculations. In addition, we also used loop unrolling to optimize our code further.